20070227.ba v04_n020.bam.20070227

>From ???@??? Mon Feb 26 18:11:19 2007 -0600
Date: Tue, 27 Feb 2007 00:09:42 GMT
From: Old Tube Radios <boatanchors@theporch.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: BOATANCHORS digest 4020
Message-Id: <20070227000943.0F44D187B00@srvr1.theporch.com>

BOATANCHORS Digest 4020

Topics covered in this issue include:

1) Re: Solid State Rectifier Replacement for 51JX
   by "Brian A Clarke" <brianclarke01@optusnet.com.au>
2) Re: Solid State Rectifier Replacement for 51JX
   by "David Stinson" <arc5@ix.netcom.com>
3) Re: Solid State Rectifier Replacement for 51JX
   by "David Stinson" <arc5@ix.netcom.com>
4) Re: Solid State Rectifier Replacement for 51JX
   by "Tom Rauch" <w8ji@contesting.com>
5) Re: Solid State Rectifier Replacement for 51JX
   by "Marty Reynolds' debris field" <polepeeg@aa4rm.ba-watch.org>
6) Re: Solid State Rectifier Replacement for 51JX
   by "JAMES HANLON" <knjhanlon@msn.com>
7) Dont fret the idiots who have been braying for years - Ray Jefferson
   by Zengmeiste@aol.com
8) Re: Dont fret the idiots who have been braying for years - Ray Jefferson
   by "Tom Rauch" <w8ji@contesting.com>
9) Re: Solid State Rectifier Replacement for 51JX
   by spr@earthlink.net
10) Re: Solid State Rectifier Replacement for 51JX
   by "Arden Allen" <gumbear@pacbell.net>
11) Re: Solid State Rectifier Replacement for 51JX
   by "Arden Allen" <gumbear@pacbell.net>
12) Re: Solid State Rectifier Replacement for 51JX
   by spr@earthlink.net
13) Personal attacks and audiophooles
   by "Arden Allen" <gumbear@pacbell.net>
14) Re: Solid State Rectifier Replacement for 51JX
   by "Tom Rauch" <w8ji@contesting.com>
15) Re: Solid State Rectifier Replacement for 51JX
   by spr@earthlink.net
16) Lowering power supply output voltage.
   by "Ken Hickman" <n5cm@rtconline.com>
17) Re: Solid State Rectifier Replacement for 51JX
   by "Brian A Clarke" <brianclarke01@optusnet.com.au>
18) Re: Solid State Rectifier Replacement for 51JX

by "Tom Rauch" <w8ji@contesting.com>
19) 838 Tubes Needed
by "Greg Carter" <kx4r@earthlink.net>
20) DX-100 Power Supply
by "Mike" <mike46@cwjamaica.com>
21) Re: DX-100 Power Supply
by "Tom Rauch" <w8ji@contesting.com>

Message-ID: <04cc01c75984$ee0af880$0202a8c0@Belkin>
From: "Brian A Clarke" <brianclarke01@optusnet.com.au>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Date: Mon, 26 Feb 2007 20:02:49 +1100
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Arden,

Clearly, you are a very well educated electronics engineer who has designed thousands of power transformers. ;);)

But ...

You do yourself and the list members no good turn by continuing to rant about categories of people of whom you have no personal knowledge. And even if you did have personal knowledge, it would be irrelevant to the technical discussion in which some of us are trying to participate. One of the cheapest tricks that a presenter can take is to attack persons rather than stick to the point.

Why not stick to what you know?

Brian - getting rather annoyed by Arden's incessant mantras.

Message-ID: <001901c759a5$ad95cca0$fa01fea9@Default>
From: "David Stinson" <arc5@ix.netcom.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Date: Mon, 26 Feb 2007 06:57:30 -0600
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

I grant all that you folks are saying....
And hours of "before" and "after" running of the receiver,
showed me a cooler transformer and a cooler set that
ran just fine. I don't explain it, I just use it.
73 D.S.

Message-ID: <002101c759a5$e4d83900$fa01fea9@Default>
From: "David Stinson" <arc5@ix.netcom.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Date: Mon, 26 Feb 2007 06:59:03 -0600
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

How about using a capacitor in series with the secondary leads
to lower the B+ voltage?

Message-ID: <001301c759ad$20ceb360$640fa8c0@radioroom>
From: "Tom Rauch" <w8ji@contesting.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Date: Mon, 26 Feb 2007 08:50:36 -0500
MIME-Version: 1.0
Content-Type: text/plain;
     format=flowed;
     charset="iso-8859-1";
     reply-type=original
Content-Transfer-Encoding: 7bit

I'm going to change my tune about the original 51Jx post a
little bit.

I didn't know that radio was a choke input. Being a choke
input the voltage change in HV from using a good high vaccum
rectifier to a solid state is small, and the voltage change
from no load to full load can be awsome in a choke input
supply if the load current drops below the value to set
critical inductance.

So in this case, since the supply filter has no input
capacitor, one problem we normally see (the large voltage
drop across the vacuum rectifier) is made much smaller (a
few volts) and the other problem that is usually minor

(voltage change from no load to full load) can be greatly
exaggerated from what we normally see. The HV might increase
as much as 50% or more while the other tubes are warming up.

So in the case of a choke input supply it might be a good
idea to withhold high voltage until the load is in place.

This has nothing to do with inrush or ramp up, and little to
do with lowering temp in the transformer. It only has to do
with the exaggerated ratio of no load to full load voltage
in a cap input filter compared to what we normally see. The
soft, loose, limp, or flacid dynamic voltage regulation of a
high vacuum rectifier compared to the stiff, hard, firm, or
rigid voltage drop of a semiconductor diode doesn't mean
much when peak current is low. Choke input supplies are good
candidates for conversion from high vacuum to solid state
rectifiers.

73 Tom

Message-ID: <49590.76.17.111.22.1172498072.squirrel@fracas.netboobie.org>
Date: Mon, 26 Feb 2007 08:54:32 -0500 (EST)
Subject: Re: Solid State Rectifier Replacement for 51JX
From: "Marty Reynolds' debris field" <polepeeg@aa4rm.ba-watch.org>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: "Old Tube Radios" <boatanchors@theporch.com>
MIME-Version: 1.0
Content-Type: text/plain;charset=iso-8859-1
Content-Transfer-Encoding: 8bit

>......,.,One of the cheapest tricks that a presenter can
> take is to attack persons rather than stick to the point.
>

Done very effectively by J. Cochan in the Tate/Simpson trial

Now, on SS replacements

Why hasn't anyone put SCRs as substitutes for s-s diodes? If each SCR
turn-on delayed on
it's half-cycle, then DC system voltage preserved - nirvanna

No heat build-up from a series resistor.

Problem is 'floating' the trigger ckt. on each diode. NJE did this well

in LV power supplies
a half century back. Underline LV.

Nothing's easy but if there's HP progeny out here in BA arena, maybe one
wil I-N-V-E-N-T

   Marty

Message-ID: <BAY110-DAV2E4C7D80A5140DD89A5CBA0830@phx.gbl>
From: "JAMES HANLON" <knjhanlon@msn.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Date: Mon, 26 Feb 2007 09:59:39 -0700
MIME-Version: 1.0
Content-Type: multipart/alternative;
     boundary="----=_NextPart_000_005F_01C7598C.D42BC400"

This is a multi-part message in MIME format.

------=_NextPart_000_005F_01C7598C.D42BC400
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: quoted-printable

One thing you fellows might want to try if you are concerned about the =
heat inside your receiver is to improve the ventilation air flow by =
adding a fan. Quite a while ago, at the suggestion of a fellow whom I =
met at a hamfest in the Columbus, Ohio area, I added a Muffin exhaust =
fan to the rear of my HRO-50. It is positioned just behind the =
rectifier tube and the push-pull 6V6 audio tubes. I also blocked off =
the other vents in that part of the cabinet so that air flows out =
through the fan, with aluminum duct tape of course. The fan pulls air =
in through other openings in the cabinet, around the knobs and around =
the coil drawer in front, etc. The big improvement for me was to reduce =
the slow, warm-up drift in the receiver to almost nothing. The only =
downside I notice is the fan noise, but I was already putting up with =
fan noise from my Central Electronics 100V, so one more wasn't that bad.

73,

Jim, W8KGI
------=_NextPart_000_005F_01C7598C.D42BC400
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

* *
*   ---REMAINDER OF MESSAGE TRUNCATED---   *

```
*     This post contains a forbidden message format       *
*  (such as an attached file, a v-card, HTML formatting)  *
*    Mail Lists at theporch.com only accept PLAIN TEXT    *
* If your postings display this message your mail program *
* is not set to send PLAIN TEXT ONLY and needs adjusting  *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

------=_NextPart_000_005F_01C7598C.D42BC400--

------------------------------
From: Zengmeiste@aol.com
Message-ID: <cb6.af0f62d.331474b0@aol.com>
Date: Mon, 26 Feb 2007 12:36:48 EST
Subject: Dont fret the idiots who have been  braying for years - Ray Jefferson
To: Old Tube Radios <boatanchors@theporch.com>
MIME-Version: 1.0
Content-Type: multipart/alternative;
boundary="part1_cb6.af0f62d.331474b0_boundary"


--part1_cb6.af0f62d.331474b0_boundary
Content-Type: text/plain; charset="US-ASCII"
Content-Transfer-Encoding: 7bit
```

You tell 'em, Ray! I really appreciate your post. THNKS!

It's very discouraging for us newbies who're still Learning code
to hear so much negativity. OK, so the dunderheads* at ARRL pulled
element 1, I don't think that's the way to go Either, but it ain't
gonna have no impact on moi.

I'm working on the tapes I bought at PeoriaFest when I sat for the Tech,
General & Extra; Never found out how many questions I missed on the Extra,
tho, darnit, aren't they supposed to tell you that?.

Good DX, Ray. Have a great 2007.

73, Terry Bakowski KC9KEL

*or whatever term you'd like to use; I could have said 'cretins',
would that be more accurate?<BR><BR><BR>**************************************<BR>
AOL now
offers free email to everyone. Find out more about what's free from AOL at

```
--part1_cb6.af0f62d.331474b0_boundary
```

Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*         ---REMAINDER OF MESSAGE TRUNCATED---             *
*     This post contains a forbidden message format        *
*  (such as an attached file, a v-card, HTML formatting)   *
*    Mail Lists at theporch.com only accept PLAIN TEXT     *
* If your postings display this message your mail program  *
* is not set to send PLAIN TEXT ONLY and needs adjusting   *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
```

--part1_cb6.af0f62d.331474b0_boundary--

Message-ID: <00b301c759ce$d4b5d590$640fa8c0@radioroom>
From: "Tom Rauch" <w8ji@contesting.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Dont fret the idiots who have been braying for years - Ray Jefferson
Date: Mon, 26 Feb 2007 12:51:58 -0500
MIME-Version: 1.0
Content-Type: text/plain;
     format=flowed;
     charset="iso-8859-1";
     reply-type=original
Content-Transfer-Encoding: 7bit

While I certainly agree one or two people got a little over
the top with personal attacks, calling people idiots doesn't
help your case. It actually helps theirs.

Everyone should play nice and keep it non-personal. It's
about a radio people, not the crew of the Enterprise
sleeping with your mother.

Message-ID: <30378385.1172512717630.JavaMail.root@elwamui-rubis.atl.sa.earthlink.net>
Date: Mon, 26 Feb 2007 12:58:37 -0500 (EST)
From: spr@earthlink.net
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Cc: Old Tube Radios <boatanchors@theporch.com>
Mime-Version: 1.0
Content-Type: text/plain; charset=UTF-8
Content-Transfer-Encoding: 7bit

Folks,

There are two reasons I might replace a rectifier tube with diodes:

1) Unobtanium or ridiculously priced rectifier tubes;

2) Power transformer runs hotter than I would like.

In case (2), you can install diodes and a resistor chosen to get the B+ the same under load and take 10W (80 or 5Y3) or 15W (5U4) of load off the transformer. Since you are replacing a filament rectifier, you haven't added any problems that weren't there to start with; the B+ was always at its unloaded value for 15 seconds or so between the 5Y3 warm-up and that of the heater-cathode tubes in the rest of the radio. The voltage difference is largest (450V vs 250V) in radios with speaker fields in series with the B+ used as filter chokes.

Regards,

Scott

Message-ID: <005301c759d3$346452b0$80e47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Date: Mon, 26 Feb 2007 10:03:46 -0800
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

> The
> soft, loose, limp, or flacid dynamic voltage regulation of a
> high vacuum rectifier compared to the stiff, hard, firm, or
> rigid voltage drop of a semiconductor diode doesn't mean
> much when peak current is low. Choke input supplies are good
> candidates for conversion from high vacuum to solid state
> rectifiers.

You've been renting too many DVD's lately, Tom ;-)

A choke acts as a current source/sink. It resists the change of current. Therefore its dynamic (AC) resistance (impedance) is higher than the static (DC) resistance of the circuit. And that's what we want a power supply filter to do, stop the variations from getting through to the load. The filter cap following the choke in a choke input filter, instead of charging to the peak voltage, charges more to the average value of the rectified AC voltage. Even though there is added winding resistance the regulation of a properly designed choke input filter is better than a cap input filter.

Efficiency is lower though due to the losses in the choke.

Replacing a tube rectifier with silicon diodes will raise the voltage applied to the choke but, as Tom alluded to, the superior regulation properties of a choke input filter will produce less of an increase in output voltage. The filter capacitor voltage ratings must be sufficient to withstand the higher inititial voltages before tube warm up occurs. Adding step start would overcome that difficulty but one has to ask, is the benefit of solid stating a rectifier worth the tribulations that could follow if these other factors are overlooked?

Arden Allen
KB6NAX

Message-ID: <005401c759d3$3538b9b0$80e47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: "Old Tube Radios" <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Date: Mon, 26 Feb 2007 10:07:55 -0800
MIME-Version: 1.0
Content-Type: text/plain;
    charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

> Why hasn't anyone put SCRs as substitutes for s-s diodes? If each SCR
> turn-on delayed on ....

The problem is the generation of RF noise in phase controlled thyristor rectifiers. Not easy to sufficiently tame in a sensitive receiver.

Arden Allen
KB6NAX

Message-ID: <33192361.1172515814875.JavaMail.root@elwamui-rubis.atl.sa.earthlink.net>
Date: Mon, 26 Feb 2007 13:50:14 -0500 (EST)
From: spr@earthlink.net
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Cc: Old Tube Radios <boatanchors@theporch.com>
Mime-Version: 1.0
Content-Type: text/plain; charset=UTF-8
Content-Transfer-Encoding: 7bit

Folks,

This is the same reason that mercury vapor rectifiers (type 83, for instance) are not used in receivers; the fast switch-on makes a lotta noise.

Peace,

Scott

```
-----Original Message-----
>From: Arden Allen <gumbear@pacbell.net>
>Sent: Feb 26, 2007 1:07 PM
>To: Old Tube Radios <boatanchors@theporch.com>
>Cc: Old Tube Radios <boatanchors@theporch.com>
>Subject: Re: Solid State Rectifier Replacement for 51JX
>
>> Why hasn't anyone put SCRs as substitutes for s-s diodes?  If each SCR
>> turn-on delayed on ....
>
>The problem is the generation of RF noise in phase controlled thyristor
>rectifiers.  Not easy to sufficiently tame in a sensitive receiver.
>
>Arden Allen
>KB6NAX
>
```

```
------------------------------
Message-ID: <008001c759d7$aa719680$80e47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Personal attacks and audiophooles
Date: Mon, 26 Feb 2007 10:55:09 -0800
MIME-Version: 1.0
Content-Type: text/plain;
     charset="Windows-1252"
Content-Transfer-Encoding: 7bit
```

It may be that one or two folks on the List feel they are being personally singled out for derision by my criticism of the present day mythology based audio culure. An assertion was made that I should have personal experience with idividuals who function by the thought process I'm referring to. I do. Plenty. In fact I spend far more time working in the audio field than in amateur radio these days. Mainly for econimic reasons as I'm not a masochist. On almost a daily basis I have to listen to the wildest unsubstantiated baloney that never in my life I've heard coming out of amateur radio. Let me provide an example:

Recently an audio enthusiast sent me a switching technology stereo amplifier, a modest unit capable of about 15 watts per channel for my consideration. It is a Sonic Impact (www.si-5.com) portable "T-amp" model 5066 available from Parts Express for $30. Cute little lump of plastic but a piece of crap.

I tested the amp in the usual way by listening to music and then applying the usual sine and square waves while driving resistive loads. My battered ears told me something was wrong as the amp sounded like shattering glass when handling complex treble passages. Sure enough square wave testing revealed an unstable amplifier with different degrees of instability in each channel. Nearly 100% overshoot with long jagged damped oscillations. Near full power output with sine wave drive both channels would break into parasitic oscillation. Playing with the inputs with speaker loads I could get the amp to take off by itself producing a hearty whistle around 3kHz.

The sad thing is this fellow fell for someone's line that this little piece of imported junk was the neatest thing to come along since sliced rock cocaine.

That is one reason I have little sympathy for audio "heads."

Arden Allen
KB6NAX

Message-ID: <011c01c759e1$df587b20$640fa8c0@radioroom>
From: "Tom Rauch" <w8ji@contesting.com>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: "Old Tube Radios" <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Date: Mon, 26 Feb 2007 15:08:15 -0500
MIME-Version: 1.0
Content-Type: text/plain;
format=flowed;
charset="utf-8";
reply-type=original
Content-Transfer-Encoding: 7bit

> In case (2), you can install diodes and a resistor chosen
> to get the B+ the same under load and take 10W (80 or 5Y3)
> or 15W (5U4) of load off the transformer.

We keep saying that, but it simply isn't the change everyone seems to expect.

The vast majority of inefficiency in the power transformer is caused by the power factor of the load on the HV

secondary. The resistance loaded 5 volt winding has very
high efficiency, in the order of 90% in everything I have
tested (and that's quite a few transformers).

So the heat you save is actually only 10% or less of the
filament load reduction, and if you add a resistor to
restore high voltage to original values you still have the
same heat from HV systems.

It's the short duty load caused by a capacitor input filter
that kills efficiency in the transformer.

Fixing a potential filament to other winding or ground short
is an advantage, but not reduced heat inside the
transformer.

If the 5V filament winding was 50% efficient, which would be
the case if it dissipated equal power as the filament of the
rectifier, the open circuit voltage of that winding would go
to 10 volts and the thing would be burning paper inside the
transformer when used.

73 Tom

Message-ID: <12266902.1172523422465.JavaMail.root@elwamui-rubis.atl.sa.earthlink.net>
Date: Mon, 26 Feb 2007 15:57:02 -0500 (EST)
From: spr@earthlink.net
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Mime-Version: 1.0
Content-Type: text/plain; charset=UTF-8
Content-Transfer-Encoding: 7bit

Tom adn other interested parties,

I realize that 51JX probably doesn't use a field coil speaker, but for radios that do, the following is possible:

1) remove the field coil speaker and replace it with a modern speaker of the same size, which may also sound better.

2) Replace the rectifier tube with diodes

3) Add an input filter choke to create a choke input filter. The B+ voltage will

come out about the same, because the approximately 100V field coil drop plus 50V rectifier drop are no longer there, compensating for the reduced DC voltage output of the choke input filter

**For those not conversant with this issue, the output voltage from a capacitor input filter is the rms voltage x 1.414 -rectifier drop (40-60V for filament rectifiers) - resistive losses in the power transformer, probably another 10-20%, and lastly minus half the ripple P-P amplitude.

The output from a choke input filter is 0.636 times the RMS voltage minus, in this case, the diode drop of 0.6V and the choke and transformer resistive losses.**

You have now reduced the RMS current due to B+ current from several times the DC value to about 1 x said DC current, a major transformer cooler. You have also taken a watt or two out of the transformer due to no load on 5V winding. I agree that the first change is the major heat remover.

I have not done this to any radio where I still had the original speaker.

Yours for constructive modification,

Scott Robinson

-----Original Message-----
>From: Tom Rauch <w8ji@contesting.com>
>Sent: Feb 26, 2007 3:08 PM
>To: spr@earthlink.net, Old Tube Radios <boatanchors@theporch.com>
>Cc: Old Tube Radios <boatanchors@theporch.com>
>Subject: Re: Solid State Rectifier Replacement for 51JX
>
>> In case (2), you can install diodes and a resistor chosen
>> to get the B+ the same under load and take 10W (80 or 5Y3)
>> or 15W (5U4) of load off the transformer.
>
>We keep saying that, but it simply isn't the change everyone
>seems to expect.
>
>The vast majority of inefficiency in the power transformer
>is caused by the power factor of the load on the HV
>secondary. The resistance loaded 5 volt winding has very
>high efficiency, in the order of 90% in everything I have
>tested (and that's quite a few transformers).
>
>So the heat you save is actually only 10% or less of the
>filament load reduction, and if you add a resistor to
>restore high voltage to original values you still have the
>same heat from HV systems.
>

>It's the short duty load caused by a capacitor input filter
>that kills efficiency in the transformer.
>
>Fixing a potential filament to other winding or ground short
>is an advantage, but not reduced heat inside the
>transformer.
>
>If the 5V filament winding was 50% efficient, which would be
>the case if it dissipated equal power as the filament of the
>rectifier, the open circuit voltage of that winding would go
>to 10 volts and the thing would be burning paper inside the
>transformer when used.
>
>73 Tom
>
>
>

Message-ID: <008401c759c3$abebca80$6b9c1f45@rtconline.com>
From: "Ken Hickman" <n5cm@rtconline.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Lowering power supply output voltage.
Date: Mon, 26 Feb 2007 16:32:13 -0000
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Hi Gang,

I hesitate to submit this! With all the learned info being tossed around I
don't recall seeing
anyone mention a simple help when converting to solid state rectifiers.
Since you are replacing the hi voltage vacuum rectifier(s) that leaves the
rectifier filament
winding idle - wire it in series with the transformer primary winding - in
series adding!
Yes, series adding. The output voltge is determined by the "turns ratio" so
if you
increase the effective turns of the primary, you lower the turns ratio
resulting is lower
output.
Don't know which is which of the filament winding leads? Just connect one
way and check
output voltage of supply. If voltage is higher than what it was with the
vacuum rectifier,
simply reverse the leads in series with the transformer primary. Then the

voltage output
should be lower.
FWIW,

Ken   N5CM

Message-ID: <017201c759f5$e643a180$0202a8c0@Belkin>
From: "Brian A Clarke" <brianclarke01@optusnet.com.au>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Date: Tue, 27 Feb 2007 09:31:45 +1100
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Hi Jim,

You have probably over-compensated with the increased airflow. Put a non-polarised capacitor in series with the fan to lower its operating voltage - it will lower the efficiency of the fan because the angles of the blades will no longer be correct, but the reduction in noise will be noticeable. A further refinement is to fit a bimetallic thermostatic switch near a thermally vulnerable point in the radio to control the fan - I've done this with 100 A power supplies and 1 kW audio amplifiers; makes them much lighter, too.

73 de Brian, Vk2GCE.

Message-ID: <015b01c759f7$b46ac9c0$640fa8c0@radioroom>
From: "Tom Rauch" <w8ji@contesting.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Solid State Rectifier Replacement for 51JX
Date: Mon, 26 Feb 2007 17:41:59 -0500
MIME-Version: 1.0
Content-Type: text/plain;
     format=flowed;
     charset="utf-8";
     reply-type=original
Content-Transfer-Encoding: 7bit

>
> 1) remove the field coil speaker and replace it with a

> modern speaker of the same size, which may also sound
> better.
>
> 2) Replace the rectifier tube with diodes
>
> 3) Add an input filter choke to create a choke input
> filter. The B+ voltage will come out about the same,
> because the approximately 100V field coil drop plus 50V
> rectifier drop are no longer there, compensating for the
> reduced DC voltage output of the choke input filter

> The output from a choke input filter is 0.636 times the
> RMS voltage minus, in this case, the diode drop of 0.6V
> and the choke and transformer resistive losses.**

That's an excellent idea Scott and it would reduce
transformer stress because of the change from capacitor to
choke input.

One minor point. It's actually .9 times rather than .636
times .

73 Tom

Message-ID: <002d01c759fc$f14c7960$0100a8c0@kx4r2>
From: "Greg Carter" <kx4r@earthlink.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: 838 Tubes Needed
Date: Mon, 26 Feb 2007 18:21:52 -0500
MIME-Version: 1.0
Content-Type: text/plain;
     charset="Windows-1252"
Content-Transfer-Encoding: 7bit

Hello Gang !
I have a friend who is restoring a vintage Corp of Engineers transmitter
used in the 40's. It's a large rack mount unit consisting of a single 813
modulated by a pair of 838's. He has it up and running but would like to
acquire a spare set of 838's. Would anyone on the list happen to have a
good pair reasonably priced that they'd
sell or perhaps trade? Let me know if you can help !

Thanks and 73,
Greg KX4R

From: "Mike" <mike46@cwjamaica.com>

To: Old Tube Radios <boatanchors@theporch.com>
Subject: DX-100 Power Supply
Date: Mon, 26 Feb 2007 18:30:44 -0500
Message-ID: <000201c759fe$23422090$0100000a@usern1yudx31pt>
MIME-Version: 1.0
Content-Type: text/plain;
    charset="windows-1250"
Content-Transfer-Encoding: 7bit

Since power supplies are a hot topic these days here's a question.

The Heathkit DX-100 B+ has two 125uF filter caps in series each paralleled by a 15K resistor, pretty standard, but why only 15K? Wouldn't a higher value, say 50K, place less stress on the transformer etc?

For those without a schematic there is also a connection to where the caps and resistors meet, that uses approx 1/2 B+ to feed what appears to be some small current users. And there's a 5.5H choke between the rectifiers (5R4's) and the "top" of the caps.

Mike VE7MMH

--
No virus found in this outgoing message.
Checked by AVG Free Edition.
Version: 7.5.446 / Virus Database: 268.18.4/703 - Release Date: 2/26/2007 2:56 PM

Message-ID: <018501c75a03$8b896eb0$640fa8c0@radioroom>
From: "Tom Rauch" <w8ji@contesting.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: DX-100 Power Supply
Date: Mon, 26 Feb 2007 19:09:14 -0500
MIME-Version: 1.0
Content-Type: text/plain;
    format=flowed;
    charset="windows-1250";
    reply-type=original
Content-Transfer-Encoding: 7bit

> The Heathkit DX-100 B+ has two 125uF filter caps in series
> each
> paralleled by a 15K resistor, pretty standard, but why
> only 15K?

Because it is a choke input supply, and without a bleeder that draws sufficient current the voltage could soar as much as 50% higher than normal operating voltage.

> Wouldn't a higher value, say 50K, place less stress on the
> transformer
> etc?

No. How many angels we can fit on the cap of a 6146? :-)

A transformer that can supply current for the modulator output tubes plus the PA tubes, hundreds of mA, isn't going to notice 20mA of bleeder current.

The tap point feeds the clamp tube grid. The clamp tube grid has to be fed from a HV line that switches on with the HV so the clamp tube can clamp the screen to ground if there isn't any drive. The - voltage generated by the drive turns the clamp tube off and this allows screen voltage.

It's actually a well-thought system like much of the old boatanchor gear was. I think the CW test had a lot to do with the good designs back then. :-)

73 Tom

End of BOATANCHORS Digest 4020
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